

Notice of Allowability

Application No.

10/658,700

Applicant(s)

KASUGA ET AL.

Examiner

Pritham Prabhakher

Art Unit

2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 03/29/2007.
2. ☒ The allowed claim(s) is/are 1-3 and 5-9.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Douglas P. Mueller on 06/11/07.

The application has been amended as follows:

Claims 6 and 7 have been changed to depend from claim 1 instead of the cancelled claim 4.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Allowable Subject Matter

Claims 1-3 and 5-9 are allowed.

The following is an examiner's statement of reasons for allowance:

*In regard to the independent **Claim 1**, the prior art fails to teach or reasonably suggest "an imaging device chip set comprising: an imaging chip provided for obtaining an electric signal by photoelectric conversion of incident light; and a DSP chip provided for carrying out digital signal processing with respect to the electric signal obtained by the imaging chip, wherein*

the imaging chip includes: a plurality of unit pixels for generating the electric signal by the photoelectric conversion of incident light; a horizontal scanning circuit for selecting the unit pixels in a horizontal direction; and a vertical scanning circuit for selecting the unit pixels in a vertical direction,

the DSP chip includes: a timing generating circuit for generating timing pulses necessary for operations of the horizontal scanning circuit and the vertical scanning circuit; and a digital signal processing circuit for carrying out digital signal processing with respect to the electric signal generated by the plurality of unit pixels, the timing generating circuit and the digital signal processing circuit, which are included in the DSP chip, are formed with CMOS transistors, and the plurality of unit pixels, the horizontal scanning circuit, and the vertical scanning circuit, which are included in the imaging chip, are formed with transistors of a same conductivity type, at least a part of the horizontal scanning circuit and vertical scanning circuit included being formed with dynamic shift register circuits composed of the transistors of the same conductivity type and capacitors.

Regarding **Claims 2,3 and 5-9**, these claims are allowed as being dependent from allowed independent claim 1.

The following are the closest references found:

Yonemoto et al. (US Patent No.: 6483541B1) discloses a solid state imaging device and a signal processing method therefor as well as a camera by which a reference signal for cancellation of vertical string-like fixed pattern noises can be obtained readily. In an initial stage after a power supply to the device is made available, a substrate pulse is outputted from a timing generator to reset pixel transistors immediately before pixel signals are read out. Then, in a condition wherein there is no signal originating from incidence of light, an operation pulse signal is caused to rise immediately to read out pixel signals from the pixel transistors through operation switches so as to be held by capacitors. Thereafter, in a horizontal image period, a horizontal scanning pulse signal is outputted from a horizontal shift register to successively put horizontal switches into a connecting state to successively output the signals of the capacitors thereby to obtain a reference signal for cancellation of vertical string-like fixed pattern noises.

Koizumi et al. (US Patent No.: 7129985B1) disclose a sensor integrated on a single semiconductor substrate that comprises a sensor block including a pixel unit including a plurality of pixels each including a light-receiving element and scanning units for selecting a pixel of the pixel unit, and a signal processing block for processing a

Art Unit: 2622

signal output from the sensor block. To reduce noise and power consumption, the power supply voltage or the amplitude or high level of a clock signal used in the sensor block is higher than the power supply voltage of the signal processing block.

Conclusion

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pritham Prabhakher whose telephone number is 571-270-1128. The examiner can normally be reached on M-F (7:30-5:00) Alt Friday's Off.

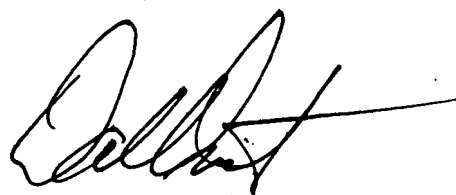
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on (571)272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2622

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Pritham David Prabhakher
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Pritham . D. Prabhakher

A handwritten signature in black ink, appearing to read 'David Ometz', with a long horizontal stroke extending to the right.

DAVID OMETZ
SUPERVISORY PATENT EXAMINER